

A schematic diagram of a rod assembly within a pump. The assembly consists of a central rod (101) with a hatched section (102) in the middle. Two ellipses (91 and 92) represent cross-sections of the rod. Dimensions are indicated by arrows:  $L_{rod}/2$  is the distance from the right end of the rod to the center of ellipse 91;  $L_{tl}$  is the distance from the right end of the rod to the center of ellipse 92;  $L_{tp}$  is the distance from the center of ellipse 91 to the center of ellipse 92;  $L_{pump}$  is the length of the hatched section;  $L_{end}$  is the length of the unshaded sections at each end; and  $L_{rod}$  is the total length of the rod. A vertical dashed line (101) passes through the center of the hatched section. A horizontal line (1) is at the top, and a vertical line (B) is at the right end.

The diagram illustrates a rod pump assembly with the following components and dimensions:

- Components:**
  - 3:** Wellhead or surface connection on the left.
  - 1:** The main rod pump body.
  - 92:** A component, likely a seal or check valve, located near the left end of the rod.
  - 101:** A vertical dashed line representing the centerline of the pump.
  - 91:** A component, likely a seal or check valve, located near the right end of the rod.
  - A:** A specific point on the rod, located between the two valves.
  - B:** The right end of the rod pump body.
- Dimensions:**
  - $L_m$ : The distance from the wellhead (3) to the left end of the pump body (1), and from the right end of the pump body (B) to the wellhead on the right.
  - $L_{rod}/2$ : The distance from the centerline (101) to the right end of the rod (B).
  - $L_{tl}$ : The distance from the centerline (101) to the point A.
  - $L_{end}$ : The distance from the left end of the pump body (1) to the left valve (92), and from the right end of the pump body (B) to the right valve (91).
  - $L_{pump}$ : The total length of the pump body (1).
  - $L_{rod}$ : The total length of the rod assembly.

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Fig.8

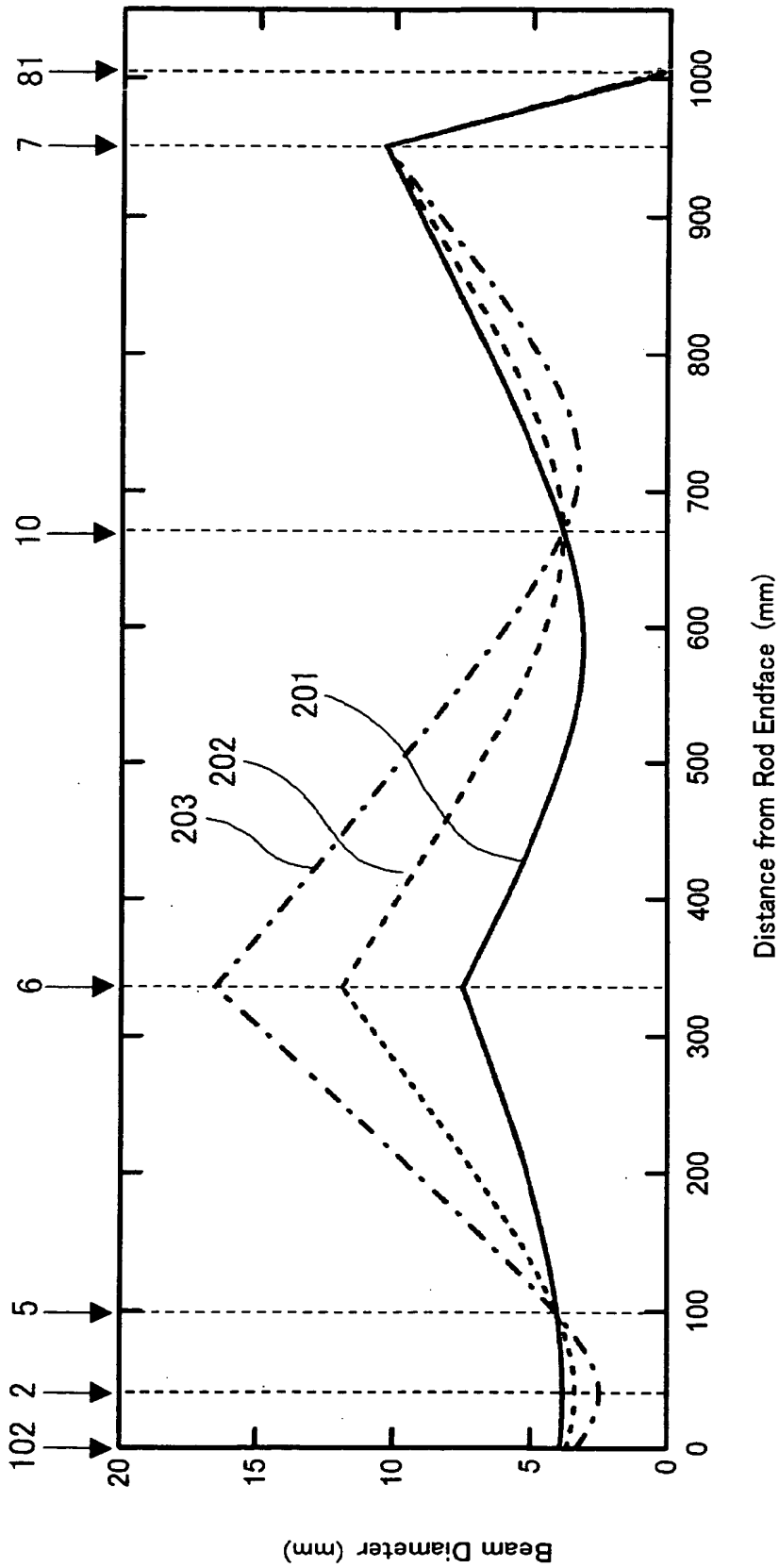


Fig.9

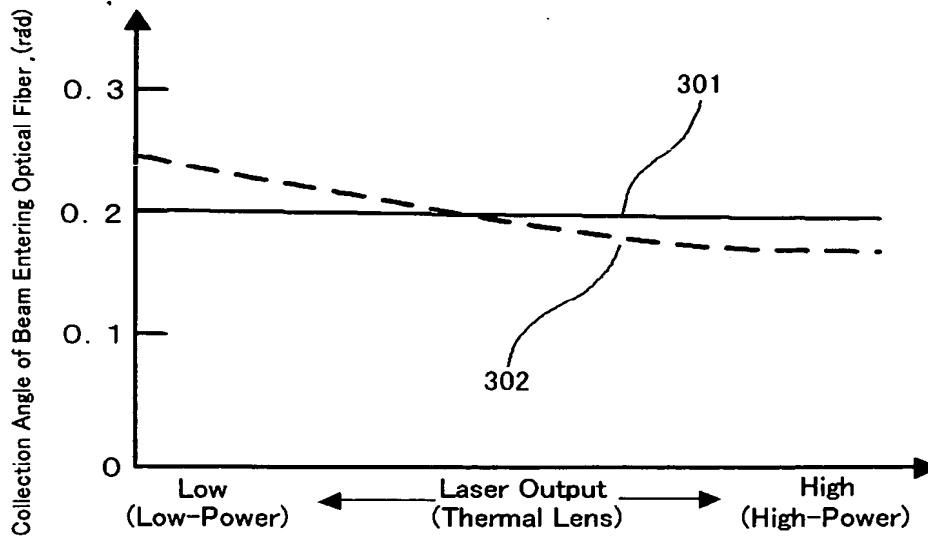


Fig.10

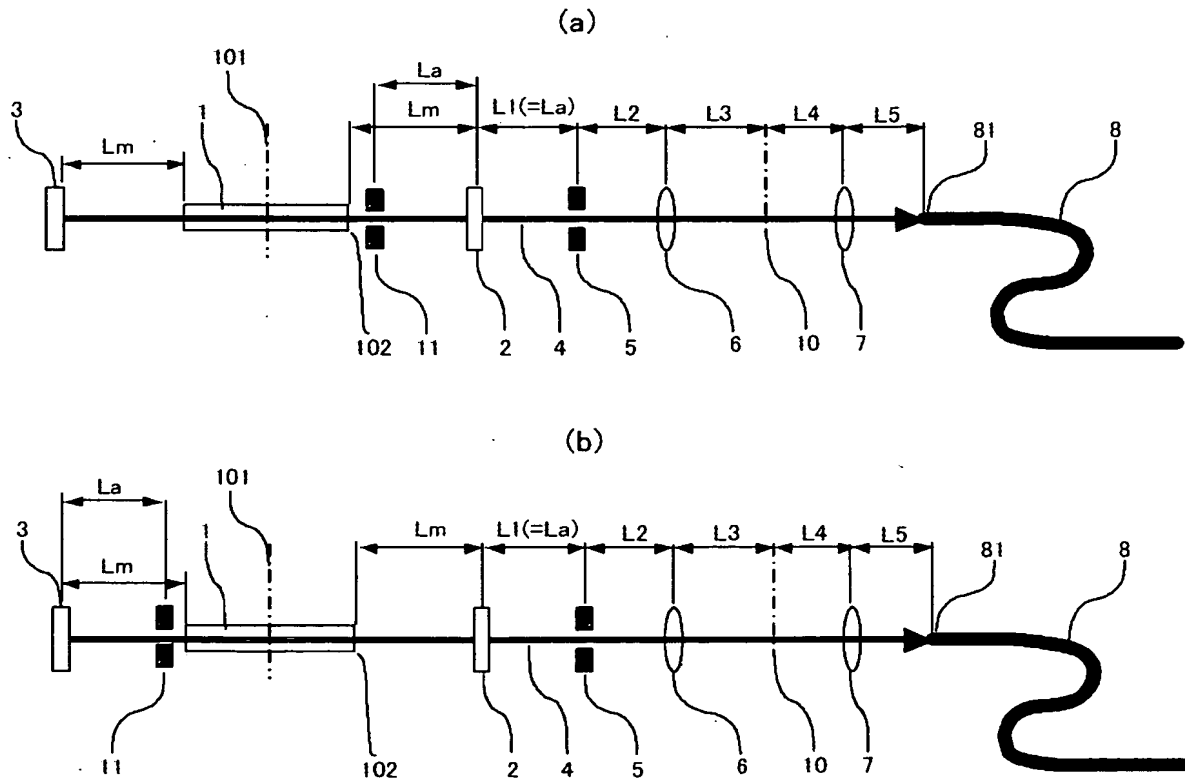
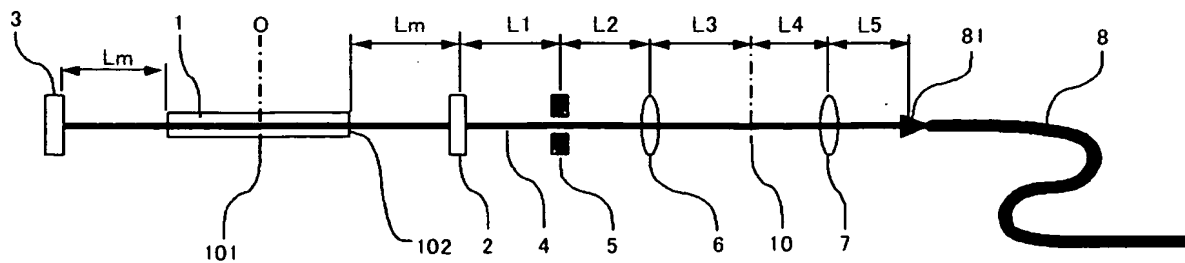


Fig.11



**Fig.12**

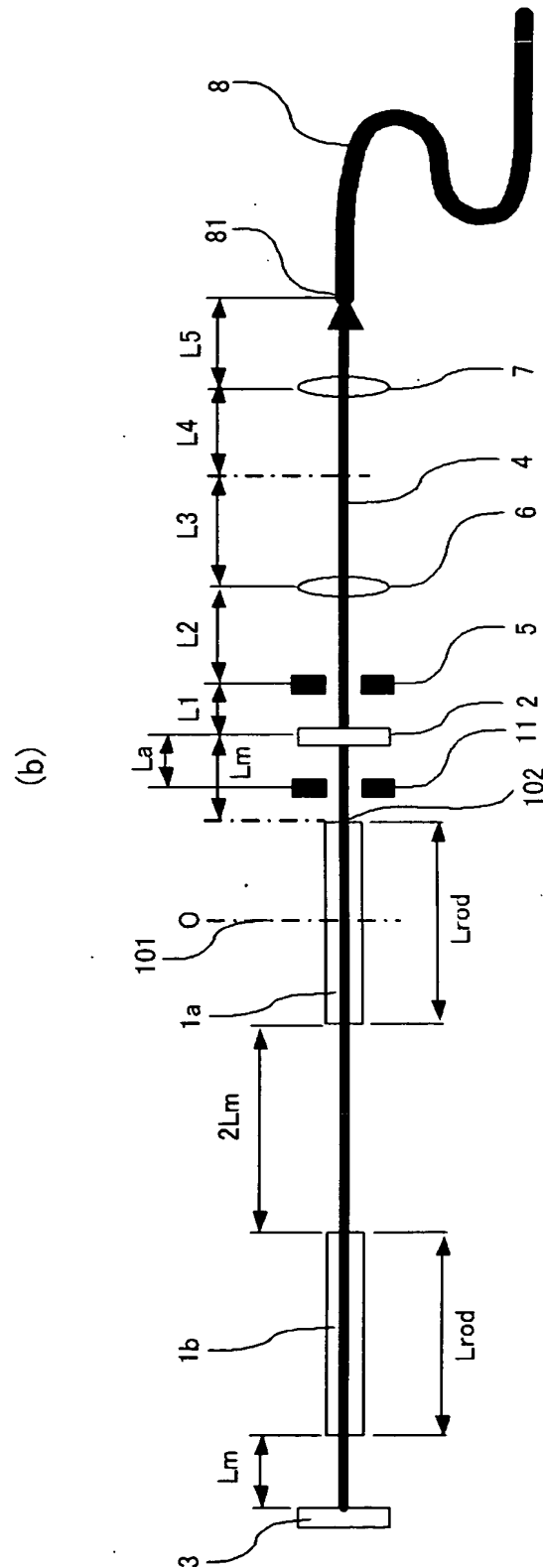
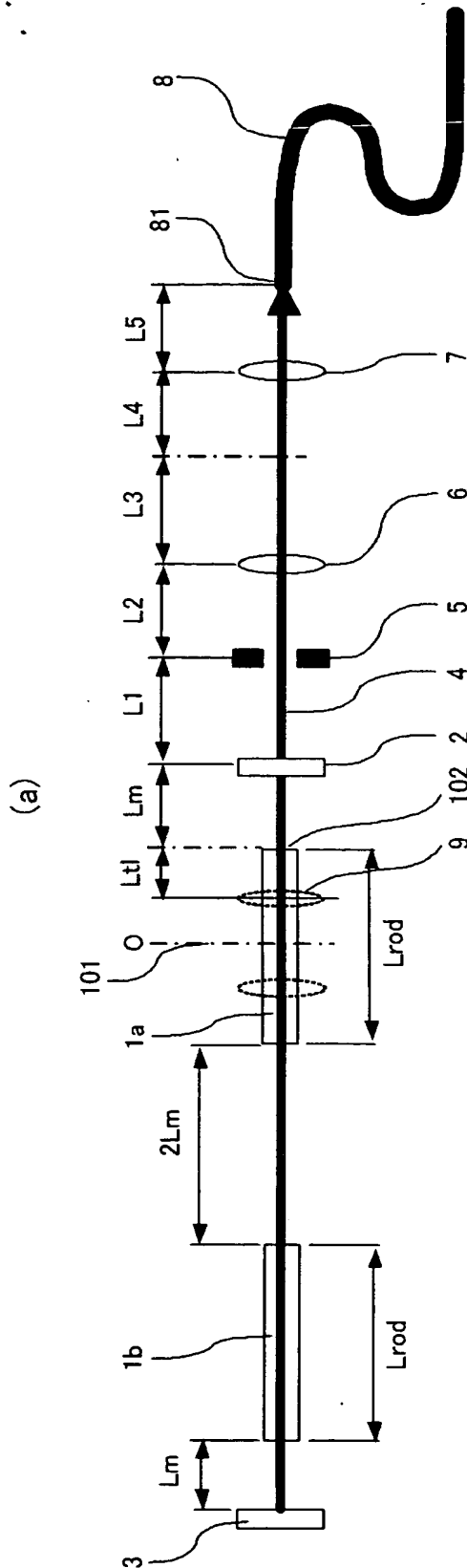




Fig.14

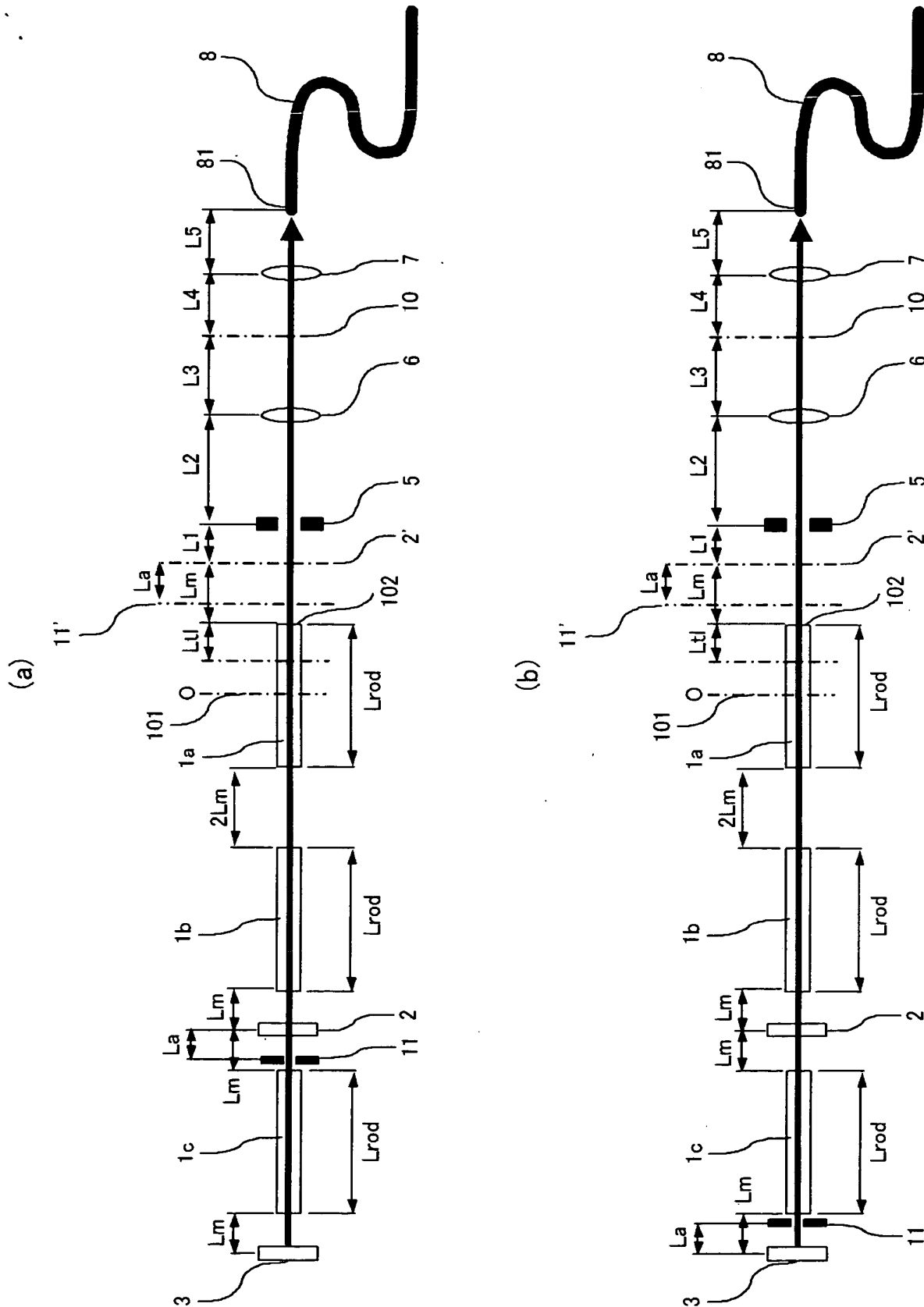


Fig.15

